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Applicants : Benyahia NASLI-BAKIR et al.
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For : METHOD OF APPLICATION
Examiner : Fletcher III, William P.
Art Unit : 1792

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Date: November 25, 2009

By: /Julie Forero/

REPLY BRIEF PURSUANT TO 37 C.F.R. §41.41

SIR:

In response to the Examiner's Answer mailed on September 25, 2009, Appellants submit this Reply Brief in accordance with 37 C.F.R. §41.41 in the above captioned patent application. For at least the reasons more fully set forth below, as well as the reasons more fully set forth in the "Appeal Brief", filed on June 19, 2009, the rejections of claims 39, 41-46, 56-76, and 78-98 should be reversed.

REMARKS

The Examiner's Answer, like the Final Office Action, appears to rely on the assertion by the Examiner that Andersson is directed to join wood substrates by separate application of resin and hardener strands [p.1, ll. 4-21], and is not limited to any particular resin system and therefore the teachings in Andersson may be modified by the allegedly equivalent adhesive system as taught in Lehnert et al. See, e.g., Examiner's Answer, page 19, second paragraph ("the broader teaching of Andersson –that it is well known in the art to join wood substrates by separate application of resin and hardener strands [p1, ll 4-21] – is not limited to any particular resin system") and page 20, first paragraph ("it is clear from the cited references that both phenolic and amino systems are suitable to join wood"). According to the Examiner amino resin systems and phenolic resin systems in adhesives are function equivalents to join wood. See, e.g. Examiner's Answer, page 20, first paragraph ("it remains the Examiner's position that the disclosure of Lehnert clearly teaches that amino resin systems and phenolic resin systems are functionally equivalent to join wood"). In addition, the Examiner asserts that in Andersson the intended function is to join wood substrates with an adhesive, either system of phenolic resin or amino resin would successfully join wood and thus the references may be combined to arrive at the claimed invention. See, Examiner's Answer, page 20, second paragraph ("Andersson's intended function is to adhesively joining two pieces of wood, not selecting the pH of the hardener. It is clear that substitution of one resin system would not change the overall process steps of application in strand-form by an applicator followed by joining. Since it is clear from Andersson in view of Lehnert that either system would successfully join wood, the reference's intended function is retained, not destroyed").

In view of these assertions the Examiner maintains that the claimed invention of a method of applying an amino resin gluing system to a substrate of a gluelam or laminated timber including the steps of feeding an amino resin component selected from the group consisting of melamine-formaldehyde and melamine-urea-formaldehyde to at least a first orifice, feeding a hardener component to at least a second orifice, and discharging the resin and hardener through their respective orifices in the form of strands or spray onto a substrate is taught by the combination of the

cited references. However, as set forth in the Appeal Brief, the skilled artisan would not be motivated to modify the teachings in Andersson by a resin system as in Lehnert et al considering that Andersson teaches that water dilutability of the adhesive system elements is not desired. In fact Andersson teaches to the use of a phenolic resin system to overcome a specific problem in the art known as bleeding which appears to occur when water dilutable systems are employed. Thus Appellants submit that the Examiner's interpretation of the teachings of Andersson and Lehnert et al is incorrect. Therefore, the Examiner has failed to establish a case of prima facie obviousness.

In particular the Examiner asserts in his Examiner's answer "[t]he Examiner acknowledges that the body of the Andersson reference concerns a particular phenolic resin formulation. Nevertheless, the broader teaching of Andersson - that it is well known in the art to join wood substrates by separate application of resin and hardener strands [p.1, II. 4-21] - is not limited to any particular resin system." This general concept of "separate application" is indeed known in the art - which is also acknowledged in the present application, see page 1. The Examiner continues "[w]hile it makes common sense that a given resin system must be formulated so as to optimally function with a given application system, the fact that Andersson chooses to discuss a phenolic resin system in no way suggests that the well known method of application of resin and hardener in separate strands functions only for phenolic resins." However, this does not constitute the specific teachings of Andersson. Further the Examiner asserts that "Appellant is reminded that a patent is part of the literature of the art, relevant for all it contains, and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments. See MPEP 2123(I)."

Appellants submit that the paragraph following the description of the "well known method", it is indicated that "the separate application technique also poses **several problems**", and in the next paragraph, "the mixing of the components is thus a **special problem** in connection with separate application..." and then at the bottom of the page the even more specific problem of "bleeding" is defined to be dark stains on the wood surface caused by unreacted/uncured liquid adhesive components that are dissolved and flows from glue joints when exposed to rain. Now Andersson's remedy to this is to use a resin component which has limited water dilutability. Andersson

does mention that water dilutability can be lowered by lowering the pH - but Andersson clearly states that this will give the resin a **low reactivity** and expressly states that this is **less desirable**. Thus, Appellants submit that it cannot **reasonably** be said that Andersson teaches “to lower the pH” to one of ordinary skill in the art.

Furthermore, the Examiner in relation to the above refers to MPEP 2123(I). When considering obviousness the totality of the prior art must be considered, and proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986) (Applicant's claimed process for sulfonating diphenyl sulfone at a temperature above 127°C was contrary to accepted wisdom because the prior art as a whole suggested using lower temperatures for optimum results as evidenced by charring, decomposition, or reduced yields at higher temperatures). Furthermore, “[k]nown disadvantages in old devices which would naturally discourage search for new inventions may be taken into account in determining obviousness.” *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966). See also MPEP 2145. Again, it cannot **reasonably** be said that Andersson teaches “to lower the pH” to one having ordinary skill in the art, because to actually lower the pH despite Andersson's very clear teaching not to would be, and is, to proceed contrary to the wisdom conveyed by Andersson as a whole.

In his Examiner's answer, the Examiner asserts that “disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or non-preferred embodiments. See MPEP 2123(II).” Further, “A known or obvious composition does not become patentable simply because it has been described as **somewhat inferior** to some other product for the same use.” *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (The invention was directed to an epoxy impregnated fiber-reinforced printed circuit material. The applied prior art reference taught a printed circuit material similar to that of the claims but impregnated with polyester-imide resin instead of epoxy. The reference, however, disclosed that epoxy was known for this use, but that epoxy impregnated circuit boards have “**relatively acceptable dimensional stability**” and “**some degree of flexibility**,” but **are inferior** to circuit boards impregnated with polyester-imide resins. The court upheld the rejection concluding that applicant's argument that the reference teaches away from using epoxy was insufficient to overcome the rejection since “Gurley

asserted no discovery beyond what was known in the art.” See, *Id.* at 27 F.3d at 554, 31 USPQ2d at 1132.). Furthermore, “[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed.” *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

In contrast, Andersson mentions that water dilutability can be lowered by lowering the pH - but Andersson clearly states that this will give the resin a **low reactivity** and expressly states that this is **less desirable**. The cited reference doesn't disclose it's “somewhat inferior”, but discloses it's **less desirable**. The cited reference doesn't merely disclose lowering of pH as one alternative – but discloses it's **less desirable**. To say that something is **less desirable** must reasonably be regarded as criticizing, discrediting, or otherwise discouraging from that something.

As discussed above the Examiner asserts that “Appellant argues that the cited prior art does not demonstrate the equivalence of phenolic and amino resins **for joining wood substrates** in the conventional manner disclosed by Andersson. The Examiner disagrees. The fundamental level of inquiry rests at **functional** equivalency not compositional **sameness**. See MPEP 2144.06.” Appellant would certainly not require compositional “sameness” in order to acknowledge equivalence, nor just some insignificant deviation from identity – and identity/sameness is indeed not at hand in the present case, but *substantial* differences:

An amino resin needs an acid hardener to cure, in contrast to a phenolic resin, which cures either by heat or with paraformaldehyde. An acid hardener may damage a wooden surface, which is one reason of why amino resins together with an acidic hardener previously have not been successful for separate application onto wood.

It is established that “in order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be **recognized** in the prior art, and **cannot** be based on applicant's disclosure or the mere fact that the components at issue are **functional** or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958) (The mere fact that components are claimed as members of a Markush group cannot be relied upon to establish the equivalency of these components. However, an applicant's expressed recognition of an art-recognized or

obvious equivalent may be used to refute an argument that such equivalency does not exist.); *Smith v. Hayashi*, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (The mere fact that phthalocyanine and selenium function as equivalent photoconductors in the claimed environment was not sufficient to establish that one would have been obvious over the other. However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. “This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor.” 209 USPQ at 759). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). See also, MPEP 2144.06.

However, “it remains the Examiner’s position that the disclosure of Lehnert clearly teaches that amino resin systems and phenolic resin systems are **functionally** equivalent to join wood.” Appellant fails to follow Examiner’s reasoning to the conclusion that Appellant’s apprehension of the concept of equivalency would be that “equivalence” would be tantamount to “identity”; this, however, is of minor importance as Appellant is perfectly aware of the difference between these concepts.

Regarding the reference to Lehnert, the Appellant would not agree as set forth in the Appeal Brief that Lehnert “**clearly**” teaches **any** equivalence between amino resin systems and phenolic resin systems of any kind whatsoever – but the Examiner’s increased use of the qualifier “functional” in connection to the concept of “to join wood” suggests that the Examiner’s apprehension of “equivalence” in the present case must be that basically **anything** that joins wood should be regarded as “**functional** equivalents”, thus not only **any** adhesive or glue that adheres to wood, but also nails, screws, ropes, clamps, etc, etc... However, not only must such a broad understanding of what could be regarded as equivalents be unreasonable – it is also estranged from how the concept of equivalence with respect to obvious equivalents such as”

- The elements perform an identical function **in substantially the same way, and produce substantially the same results**;
and/or
- A person of ordinary skill in the art recognizes the **interchangeability** of the elements;
and/or
- There are **insubstantial** differences between the **elements**;

and/or

- The elements are *structural* equivalents.

In addition, current disclosure or that of the cited reference itself may provide an indication of (functional) equivalency such as for example: a) teachings in the specification that particular prior art is not equivalent; or b) teachings in the prior art reference itself that may tend to show nonequivalence. In view thereof, it should be noted that the specification of the present application as filed on page 1, line 17-21 describes that:

“In EP 0 362 742 separate application of, interalia, amino resin gluing systems to wooden parts is suggested, by means of certain application of both the components, or of one component, and strand application of the other. However, there is no indication of a preferred order of application of said components. In the example given, **only** a phenol-resorcinol-formaldehyde resin gluing system was used.”

Thus, the specification provides an analysis and reasoning of why the disclosed amino resin gluing systems are not pertinent to the present invention – but when it comes to the disclosed phenol-resorcinol-formaldehyde resin gluing system, no such analysis or reasoning is given; not because the latter would be equivalent to amino resin gluing systems – because if so it could not just be passed over in silence – but on the contrary: it is so clearly irrelevant that it does not need to be discussed. Consequently, the specification teaches that this particular piece of prior art is not equivalent to the amino resin systems.

Further, with respect to phenolic resins and amino resins in Lehnert et al., the cited reference describes:

“The adhesives used in the manufacture of plywood are usually phenol resins (condensation products of phenol and formaldehyde) and amino resins (condensation products of formaldehyde and urea and/or melamine). **The amino resins do, however, give a high release of formaldehyde, both at pressing and from the finished products.**”
Lehnert et al., page 1, line 28-33

Thus Lehnert teaches that one of the resins gives a high release of formaldehyde, reasonably higher than the other resin. Further on in the same paragraph Lehnert indicates that this difference is important, if not critical, due to environment related demands; thus the higher release of formaldehyde is not just a difference of little or no significance, but indeed an important one. Thus Lehnert

scarcely teaches equivalence between the resins – if they were, then the choice between the resins could be left to chance, as they would be of “same value” – but Lehnert indicates that one of the resins gives a high release of formaldehyde, which is at odds with environment related demands, which is a problem – which could be avoided by choosing the other resin. This means that Lehnert at least tends to show that the resins are not equivalent.

“The method according to the invention can be used with conventional formaldehyde based, curable adhesives which are used in plywood production. Among these can be mentioned condensation products of formaldehyde and urea, melamine, phenol, resorcinol or mixtures thereof. **It is preferred to use the method with urea-formaldehyde resins with a low F:U value, i.e. < 1.6.**” Id. at page 3, line 37 – page 4, line 5.

Thus Lehnert teaches that one of the resins, namely urea-formaldehyde resins with a low F:U value (an amino resin) is preferred over other resins, such as phenol resins – which means that Lehnert at least teaches that the resins are not equivalent. The only reasonable conclusion must be that neither the present specification, nor Lehnert teaches equivalence between amino resins and phenolic resins.

Further, “the Examiner notes that obviousness need not be based only on functional equivalency. Rather, materials may be selected based upon their art-recognized suitability for the intended purpose. It is clear from the cited references that both phenolic and amino systems are suitable to join wood.” This statement regarding “suitability” is best discussed in conjunction with the Examiner’s answer to Appellant’s statement in the Appeal Brief about replacing the phenolic resin of Andersson with an amino resin would undermine Andersson’s disclosure – or in other words, the unsuitability of replacing the phenolic resin of Andersson with an amino resin. According to the Examiner “it is clear from Andersson in view of Lehnert that either system would successfully join wood, the reference's intended **function** is retained, not destroyed.

As discussed above it appears that the Examiner is of the opinion that Andersson's intended function is merely adhesively joining two pieces of wood by way of separate application. In other words, the Examiner seems to regard Andersson's disclosure as one of the principles of separate application technology and nothing else. However, as discussed Andersson indicates that “the separate

application technique also poses **several problems**”, “the mixing of the components is thus a **special problem** in connection with separate application...” and then the even more specific problem of “**bleeding**”, i.e. dark stains on the wood surface caused by unreacted/uncured liquid adhesive components that are dissolved and flows from glue joints when exposed to rain. Andersson's remedy to this is to use a resin component which has limited water dilutability. Andersson does mention that water dilutability can be lowered by lowering the pH - but Andersson clearly states that this will give the resin a **low reactivity** and expressly states that this is **less desirable**. Thus, Andersson's adhesive has a pH well above neutral, and indeed maintaining a high pH is one of the goals in Andersson.

Thus, the Examiner statement that “Andersson's intended function is adhesively joining two pieces of wood, not selecting the pH of the hardener” is not correct. In contrast to the Examiner's assertions it is rather that Andersson's intended function is adhesively joining two pieces of wood while avoiding bleeding, which is accomplished by means of resorcinol-based resin produced under certain specified reaction conditions. By substituting, as proposed by the Examiner, an amino resin for the resorcinol-based resin in Andersson, the entire teaching of specific reaction conditions in the Andersson reference must be ignored, since they are specific to resorcinol and cannot be applied to amino resins. Moreover, as Lehnert states, amino resins have an acid hardener, and acid conditions are contradictory to the Andersson teaching. The above-discussed alleged “art-recognized suitability for intended purpose” should also be seen in this context: although phenolic and amino systems could be said to be suitable to join wood using separate application technique in a general sense, it would be most unsuitable to try to apply amino resin using the separate application technique taught by Andersson, for the reasons just mentioned.

Further, with respect to the Examiner's remarks in the Examiner's answer regarding the scope of showing unexpected results in example I, Appellants submit that the nonobviousness of a broader claimed range can be supported by evidence based on unexpected results from testing a narrower range if one of ordinary skill in the art would be able to determine a trend in the exemplified data which would allow the artisan to reasonably extend the probative value thereof. *In re Kollman*, 595 F.2d 48, 201 USPQ 193 (CCPA 1979).

It is respectfully submitted that all independent claims (reciting either melamine-formaldehyde or melamine-urea-formaldehyde, or an “amino resin gluing system”) are indeed supported by the evidence provided by Example I, albeit based on melamine-urea-formaldehyde only, because one of ordinary skill in the art would be able to determine a trend in the exemplified data which would allow the artisan to reasonably extend the probative value thereof also to melamine-formaldehyde and “amino resin gluing system” in general.

However, contrary to the Examiner’s assertion in the Examiner’s answer (“[w]ith respect to Appellant’s vague arguments vis-à-vis the combination with Toshio, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in anyone or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981)”), Toshio clearly does not cure the deficiencies of the cited references. As shown above, the Andersson and Lehnert references are not compatible or at least not combinable into anything falling within the scope of the presently claimed invention which the disclosure in Toshio does not alter. Furthermore, Appellants submit that the Examiner has not adequately explained the inconsistency of Toshio’s separate strand application of components with Lehnert’s required *mixing* of components.

Accordingly, the Examiner in both the Final Office Action and the Examiner’s Answer misinterprets and mischaracterizes the teachings of Andersson and Lehnert as applied to the currently claimed process. The present invention allows applying an amino resin gluing system to a substrate of a gluelam or laminated timber including the steps of feeding an amino resin component selected from the group consisting of melamine-formaldehyde and melamine-urea-formaldehyde to at least a first orifice, feeding a hardener component to at least a second orifice, and discharging the resin and hardener through their respective orifices in the form of strands or spray onto a substrate, wherein the discharged components remain physically isolated from each other until at least one of the components contacts the substrate. This is not at all taught or suggested by Andersson in view of the cited references, because Andersson

requires a non-dilutable phenolic resin adhesive system which is not functionally equivalent to the amino adhesive system as in Lehnert et al and thus the skilled artisan would not be motivated to modify Andersson with the adhesive system in Lehnert et al to arrive at the claimed invention. Therefore, the Examiner's reliance on the teachings of Andersson in view of Lehnert et al is misplaced and does not provide a prima facie case of obviousness.

Thus, for the reasons set forth above and the reasons more fully set forth in the Appeal Brief, the rejections of claims 39, 41-46, 56-76, and 78-98 should be reversed.

Respectfully submitted,
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Dated: November 25, 2009

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